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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,526	07/19/2004	Anwar Husen	56.0753	4525

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EXAMINER	
PLANTE, JONATHAN R	
ART UNIT	PAPER NUMBER
2109	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/09/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/09/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/710,526	HUSEN ET AL.	
	Examiner	Art Unit	
	Jonathan R. Plante	2109	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *9/21/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the applicant's communication filed 17 January 2007 in response to PTO Office Action mailed 23 October 2006. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.
2. Claims 1-11 have been presented for examination in this application. In response to the last Office Action, claims 1 and 8-11 have been amended. No claims have been cancelled. As a result , claims 1-11 are now pending in this application.
3. The objection to the drawings "3D DISPLAY (I.E. PRESSURE, LIQUID, DROPOUT)" (FIG. 2, 34) as been withdrawn due to amendment filed on 17 January 2007.
4. The objection to the specification has been withdrawn due to the amendment filed 17 January 2007.
5. The objections to claim 1 have been withdrawn due to the amendment filed on 17 January 2007.
6. The objection to claim 8 has been withdrawn due to the amendment filed on 17 January 2007.
7. The rejections under 35 U.S.C. 112, second paragraph, for claim 1 have been withdrawn due to the amendment filed on 17 January 2007.

8. The rejection under 35 U.S.C. 112, second paragraph, for claim 9 has been withdrawn due to the amendment filed on 17 January 2007.

9. The rejections under 35 U.S.C. 112, second paragraph, for claim 10 have been withdrawn due to the amendment filed on 17 January 2007.

10. The rejection under 35 U.S.C. 112, second paragraph, for claim 11 has been withdrawn due to the amendment filed on 17 January 2007.

Response to Arguments

11. Applicant's arguments, see Remarks, page 7, filed 17 January 2007, with respect to the rejections of claims 1-11 under 35 U.S.C. 102(a) have been fully considered but they are not persuasive. Applicant's agrees that the Roggero et al. discloses "measuring and inputting only properties/characteristics of a subsoil structure (the permeability or the porosity of the reservoir rocks for example), and thus the properties of a well or formation" (Remarks, Page 7), but argues that Roggero et al. "fails to teach inputting the unmeasured characteristics of the well, typically referred to as PVT data or the fluid properties by which the well can be characterized, and thus fails to disclose an input device for inputting PVT data into the base model" (Remarks, Page 7).

In response examiner refers to the applicants own disclose in the Discussion of the Prior Art "Characterizing a well during operations relating to creating or

operating the well can provide various information about what is downhole in the well or adjacent subterranean formations. This information may be used in performing the operation(s) on the respective well, or it may be useful *in planning or conducting operations on other wells*. Such information includes, for example, structural information (e.g., what objects are downhole, locations of what is downhole, and events that occur downhole) and *information (e.g., pressure, temperature and parametric flow rate)*." (Paragraph 0016). Applicant has disclosed in the Discussion of the Prior Art that the use of pressure, temperature and parametric flow rate is prior art and at the time of the invention was being used in the planning or conducting of operations at other wells. Expanding the acronym PVT to represents Pressure, Volume, and Temperature it is apparent that the prior art disclosed by applicant includes pressure, temperature, and also volume as a calculation requirement for the determination of a flow rate (Flow Rate = Volume / Time). As a result applicant has acknowledged that the usage of PVT data was prior knowledge in the art. Roggero also discloses the usage of PVT data with **"By way of example, it is possible to calculate the derivatives of the main production results (pressure, saturation, flow rate, etc) in relation to the petrophysical properties (permeability, porosity, etc) assigned to zones of a reservoir" (Column 5, Line 58).**

Additionally the examiner refers to applicants's ability to be their own lexicon with reference to **"The PVT data, which heretofore has largely ignored in**

modeling schemes, includes fluid properties existing at the well, i.e., properties by which reservoir fluid can be characterized. This can be either blackoil or compositional. Blackoil means that he properties are given in terms of oil, water or gas. This takes into account the non-Darcy fluid characteristics and provides the required input to modify and optimize historic models, thereby permitting the optimization of performance predictions in the instant invention." (Paragraph 0043). Applicant has by example of Blackoil defined the PVT data to be inclusive of the properties given in terms of oil, water, or gas. Roggero clearly discloses/incorporates these properties with **"The dynamic data are for example production data such as the pressure, the gas-oil ratio (GOR) or the fraction of water in the oil" (Column 8, Line 60)**.

It is also noted by the examiner that the applicant has agreed that Roggero is entering/inputting properties/characteristics of the subsoil structure. Examiner also refers to **Figures 2, 3,** and **5** that show the inputting of **"Dynamic data"** into the model. The examiner also refers to Figures 11, 13, and 16 that are generated 3D geostatistical models/simulations resulting from the entering/inputting of data into a numerical device (computer). Roggero further discloses the usage of computers with **"Computer Implementation" (Column 11, Line 34)**. It is also inherent in the application of a model or simulation that data is entered into a system/device/equation that represent what is to be

modeled. The input device can be as simple as a pencil for writing variables into a set of equations on a piece of paper or using a keyboard/digital device to enter/load data onto a mainframe. The examiner additionally refers to applicants "Disclosure of the Prior Art" the usage and application of computer is the application of reservoir modeling/simulation with **"The computer time roughly increases as the square of the number of nodes in the model and the models must be continuously interacted with by the user to put in new faults as they are believed to have occurred." (Paragraph 0013)** and as a result it is inherent that the user is using some device to interact with the computer.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

13. Claims 1-11 are rejected under 35 U.S.C. 102(a) as being anticipated by Roggero et al. (US Patent 6,662,109 B2 December 9, 2003).

As per claim 1, Roggero et al. discloses, "a base model" **[The simulation model is preferably first calibrated (Column 8, Line 42)]** "b. an input device for inputting well logging data into the base model;" **["allows updating by the**

dynamic production data, a fine geological model representative of the distribution in the reservoir of a physical quantity characteristic of the subsoil structure (the permeability or the porosity of the reservoir rocks for example)" (Column 8, Line 8), "dynamic data are for example production data such as the pressure, the gas-oil ration (GOR) or the fraction of water in the oil" (Column 8, Line 60), and see above response to arguments] "c. an input device for inputting pressure transient data into the base model;" **["dynamic data are for example production data such as the pressure, the gas-oil ration (GOR) or the fraction of water in the oil" (Column 8, Line 60),** and see above response to arguments] d. an input device for inputting PVT data into the base model;" **["allows updating by the dynamic production data, a fine geological model representative of the distribution in the reservoir of a physical quantity characteristic of the subsoil structure (the permeability or the porosity of the reservoir rocks for example)" (Column 8, Line 8),"dynamic data are for example production data such as the pressure, the gas-oil ration (GOR) or the fraction of water in the oil" (Column 8, Line 60),** **Figures 2**, **3**, and **5**, and see above response to arguments] "e. a numerical interpreter for calculating predicted performance of the well;" **[parameters of the simulation model are adjusted, this model can be used to simulate the present and future behavior of the reservoir (Column 2, Line 15)**, and see above response to arguments] "f. a match system for comparing actual performance data with calculated predicted performance data based on the base

model; and" **[an objective function which measures the difference between the dynamic data observed in the field and the simulation results obtained for a set value of parameters θ (Column 4, Line 30)]** "g. a reiterative loop for modifying the base model to provide a match between the actual performance data and the predicted performance data to optimize the base model" **[constrained reservoir characterization is to determine the parameters of the simulation model so that the latter can reproduce the production data of the reservoir to be modeled. This parameter estimation stage is also referred to as production data fitting. The flow simulation model is thus compatible with all of the available static and dynamic data (Column 1, Line 61)].**

As per claim 2 Roggero et al. discloses, "including a data editing module for editing the pressure transient data before it is input into the base model" **[as the parameters of the simulation model are adjusted, this model can be used to simulate the present and future behavior of the reservoir (Column 2, Line 16)].**

As per claim 3, Roggero et al. discloses, "a plotting device for plotting the data generated by the system" **[Figures 4 – 7, 10-16, 18-20].**

As per claim 4, Roggero et al. discloses, "plotting device is adapted for plotting line fitting on specialized plots" **[FIGS. 19A to 19E show comparison between the pressure data and the simulation results after fitting (Column 10, Line 7)]**.

As per claim 5, Roggero et al. discloses, "plotting device is adapted for plotting specialized plots providing preliminary estimates of performance data based on the base model" **[FIG. 13 shows an initial geostatistical model (Column 9, Line 61)]**.

As per claim 6, Roggero et al. discloses, "plotting device is adapted for generating a 3D display of the well" **[FIG. 16 shows a constrained geostatistical model (Column 10, Line 1)]**.

As per claim 7, Roggero et al. discloses, "plotting device is adapted for generating performance data plots based on the optimized model" **[FIG. 4 shows the derivatives of the simulation results in relation to the parameterization of the geostatistical model (Column 9, Line 43)]**.

Claim 8 is rejected using the same rationale as per the rejection of claim 1.

As per claim 9, Roggero et al. discloses, "wherein the PVT data includes non-Darcy factors effecting fluid parameters in the well." **["fine geological model, representative of the distribution, in the reservoir, of a physical quantity characteristic of the subsoil structure." (Abstract, Line 2), "By way of example, it is possible to calculate the derivatives of the main production results (pressure, saturation, flow rate, etc.) in relation to the petrophysical properties (permeability, porosity, etc.) assigned to zones of the reservoir." (Column 5, Line 58),** and **"The dynamic data are for example production data such as the pressure, the gas-oil ratio (GOR) or the fraction of water in the oil" (Column 8, Line 60)]**.

As per claim 10, Roggero et al. discloses, "optimized model is generated by comparing the performance prediction and actual performance for a first, known zone" **[rejected using the same rationale as per the rejection of claim 1]** "optimized model is utilized to predict performance data for an unknown zone" **[Characterizing a well during operations relating to creating or operating the well can provide various information about what is downhole in the well or adjacent subterranean formations. This information may be used in performing the operation(s) on the respective well, or it may be useful in planning or conducting operations on other wells. (0016)]**.

As per claim 11, Roggero et al. discloses, "repeatedly optimized as actual performance data for multiple zones is collect" **[A flow simulation is carried out for a 42-day period on the reference geostatistical model. The synthetic pressure history (FIG. 12) is defined from the results of this reference simulation by the production well bottomhole pressure, its derivative in relation to time and the bottomhole pressure of the four observation wells (Column 15, Line 62)]**.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan R. Plante whose telephone number is (571) 272-9780. The examiner can normally be reached on Monday through Friday 9:00 AM to 4:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pierre M. Vital can be reached on (571) 272-4215. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

January 31, 2007

Jonathan Plante

FIRMIN BACKER
PRIMARY EXAMINER

JRP

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